

REMARKS

This amendment and accompanying Request for Continued Examination is in response to the Office Action mailed September 6, 2006. Claims 2-5 and 7 have been amended. New Claim 9-16 have been added.

In paragraphs 4 and 5 of the Office Action, claims 2-6 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The amended claim 2 now recites "a substrate of a single chip, the substrate having a rectangular shape which has two sides along an X-axis and two sides along a Y-axis, the X-axis and the Y-axis being perpendicular to each other in a plan view." Further, claim 4, as amended, now recites "the substrate having a rectangular shape which has a left side along a Y-axis, a right side along the Y-axis, a top side along an X-axis and a bottom side along the X-axis in a plan view, the X-axis and the Y-axis are perpendicular to each other." These amendments are clearly supported by lines 23-24 of page 23 of the original specification, stating "the magnetic sensor 60 has a rectangular (generally square) shape having sides along the X-axis and the Y-axis that are perpendicular to each other in a plan view as illustrated in Fig. 42."

With respect to the term "quadrant," claims 2 and 4 have been amended to eliminate the usage of this term. The location of the elements have been defined with respect to the sides and center lines defined in each claim.

With respect to the phrase "perpendicular center lines," the amended claim 2 recites "center lines of the rectangular shape, one of the center lines is a center line of the two sides along the X-axis and perpendicular to the Y-axis and the other of the center lines is a center line of the two sides along the Y-axis and perpendicular to the X-axis." The amended claim 4 recites "a first center line of the top side and the bottom side, the center line being perpendicular to the Y-axis" and "a second center line of the

left side and the right side, the second center line being perpendicular to the X-axis.” Applicants believe that these definitions of the center lines are clear and unambiguous, and can be easily understood by one with skill in the art. Applicants believe that such center lines are clearly disclosed and supported in the original specification for a person having an ordinary skill in the art. Therefore, Applicants respectfully request withdrawal of these rejections.

In paragraphs 6 and 7 of the Office Action, claims 4-6 were rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As stated above, Applicants believe that the amendments to claim 4 render this claim clear to one having ordinary skill in the art. Therefore, Applicants respectfully request that the Examiner withdraw this rejection.

In paragraphs 8 and 9 of the Office Action, claims 2 and 4-8 are rejected under 35 U.S.C. § 102(e) as being anticipated by International Publication No. WO 00/79298 to Adelerhof et al. (Adelerhof). The Examiner’s rejection on this ground is respectfully traversed.

As understood by the Applicants, the Examiner repeatedly states that Fig. 11 discloses that the magnetoresistance effect elements are placed symmetrically with respect to perpendicular center lines. Examiner refers to a marked up Figure 11 from Adelerhof provided in the previous Office Action. Adelerhof provides only a brief description for Figure 11 on Page 13. The detailed description lacks any explanation for Figure 11. However, from the detailed description provided with respect to Figures 8 and 9, one can infer that Figure 11 illustrates a wafer for producing a plurality of magnetic sensors, does not show the claimed magnetic sensor which detects a magnetic field.

Figures 8 and 9 of Adelerhof, lines 24-27 of page 20 state, "Figure 9 schematically shows 14 sensors aligned next to each other on a wafer together with the required magnetic field directions during deposition of the devices." Lines 8-9 of page 13 state, "Figure 9 shows an alternate embodiment of a sensing system according to the invention with a contact area inbetween the devices of the system." One with skill in the art would recognize that the number of devices illustrated in Figure 9 exceed the number for a single magnetic sensor. Thus, one having an ordinary skill in the art would recognize that Figure 9 illustrates a wafer used to produce each of the sensors disclosed in Figure 8.

Analogously, from the relationship between Figures 8 and 9, it is clear for the person having an ordinary skill in the art to interpret that Figure 11 shows a wafer to produce each of sensors disclosed in Figure 10. The dotted lines in Figure 11 illustrate how the wafer should be cut. Otherwise, the dotted lines in Figure 11 are unnecessary. Note that the Figure 9 also shows dotted lines to produce each of the Figure 8 sensors.

Note that the amended Claim 2 recites a magnetic sensor which detects a magnetic field, whereas a wafer shown in Figure 11 of Adelerhof is not a sensor and does not detect a magnetic field unless it is processed further (e.g., it must be divided into many sensors by a cutting process and the like). Furthermore, the elements identified by the Examiner lack any interconnections to form a sensor. Without disclosure of the claimed elements, the cited reference Adelerhof cannot anticipate.

Should the Examiner choose to cite Adelerhof Figure 10, it clearly is different from the amended claim 2, since the system in Figure 10 is not symmetrical with respect to a center line along an X-axis. In the absence of any disclosure or suggestion of these features of the invention, claim 2 is believed to be in condition for allowance.

With respect to amended claim 4, the same arguments for the amended claim 2 apply. Adelerhof Figure 11 does not disclose a magnetic sensor and lacks any disclosure that the elements identified by the Examiner should be coupled to form a sensor. The Final Office Action states that, "the bridges that (8) and (7) are a part of are inverted to that which is shown in Figure 10. In this bridge, given the magnetization direction of disclosed in Figure 10, the magnetization direction of the top middle elements would be opposite to that shown in Figure 10." This is not disclosed or suggested in Adelerhof at all.

Claims 5-8 depend from claim 4, and all of the limitations found therein. These claims include further limitation which, in combination with the limitations of claim 4, are neither disclosed nor suggested in the art of record. By way of example, Figure 10 and 11 of Adelerhof do not disclose or suggest the recited feature in amended claim 5 of "an X-axis magnetic sensor for detecting a magnetic field in the direction of the X-axis by full bridge connection of the first to fourth elements" and "a Y-axis magnetic sensor for detecting a magnetic field in the direction of the Y-axis by full bridge connection of the fifth to eighth elements." As stated earlier, there is no disclosure in Adelerhof that the cited devices shown in Figure 11 are connected by electrical lines which cross the dotted lines in Figure 11.

Also by example, amended claim 7 recites, "(b) an X-axis group of four of a plurality of said magnetoresistance effect elements constructs an X-axis magnetic sensor for detecting a magnetic field in an X-axis direction and all of said magnetoresistance effect elements of the X-axis group have pinned magnetization directions of the pinned layers parallel to each other." Adelerhof does not disclose or suggest this feature.

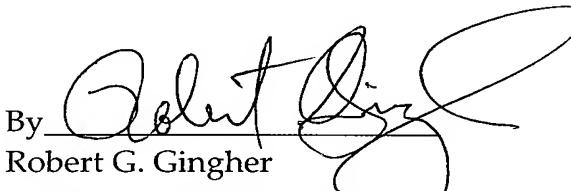
Finally amended Claim 3 recites "a single axis magnetic sensor by full bridge connection of the four elements, the single axis magnetic sensor being an X-axis

magnetic sensor for detecting a magnetic field along the X-axis or a Y-axis magnetic sensor for detecting a magnetic field along the Y-axis, said pinned magnetization directions of the pinned layers of the four elements being parallel to each other." There is no magnetic sensor in Adelerhof that has such features. Notably, the Final Office Action is devoid of any rejection of claim 3.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application issue.

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Respectfully submitted,

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